Status of Station 1 MWPCs for FNAL E906

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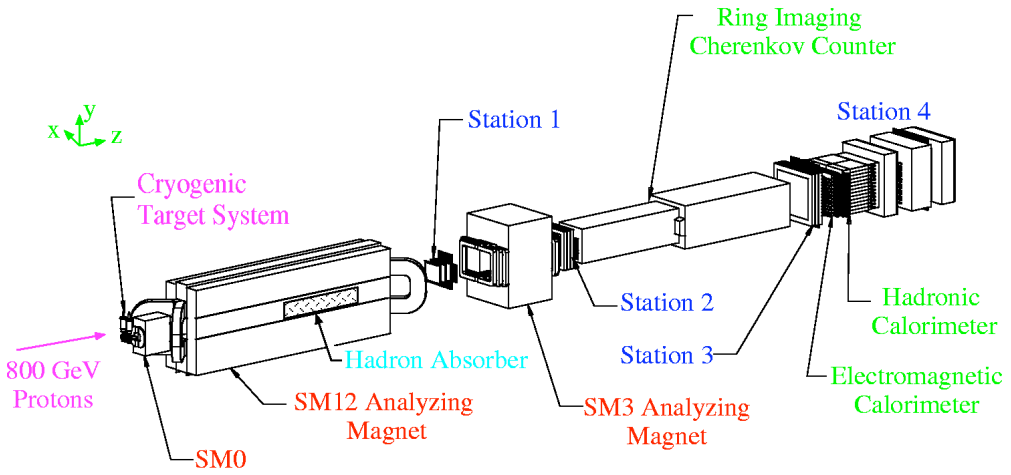
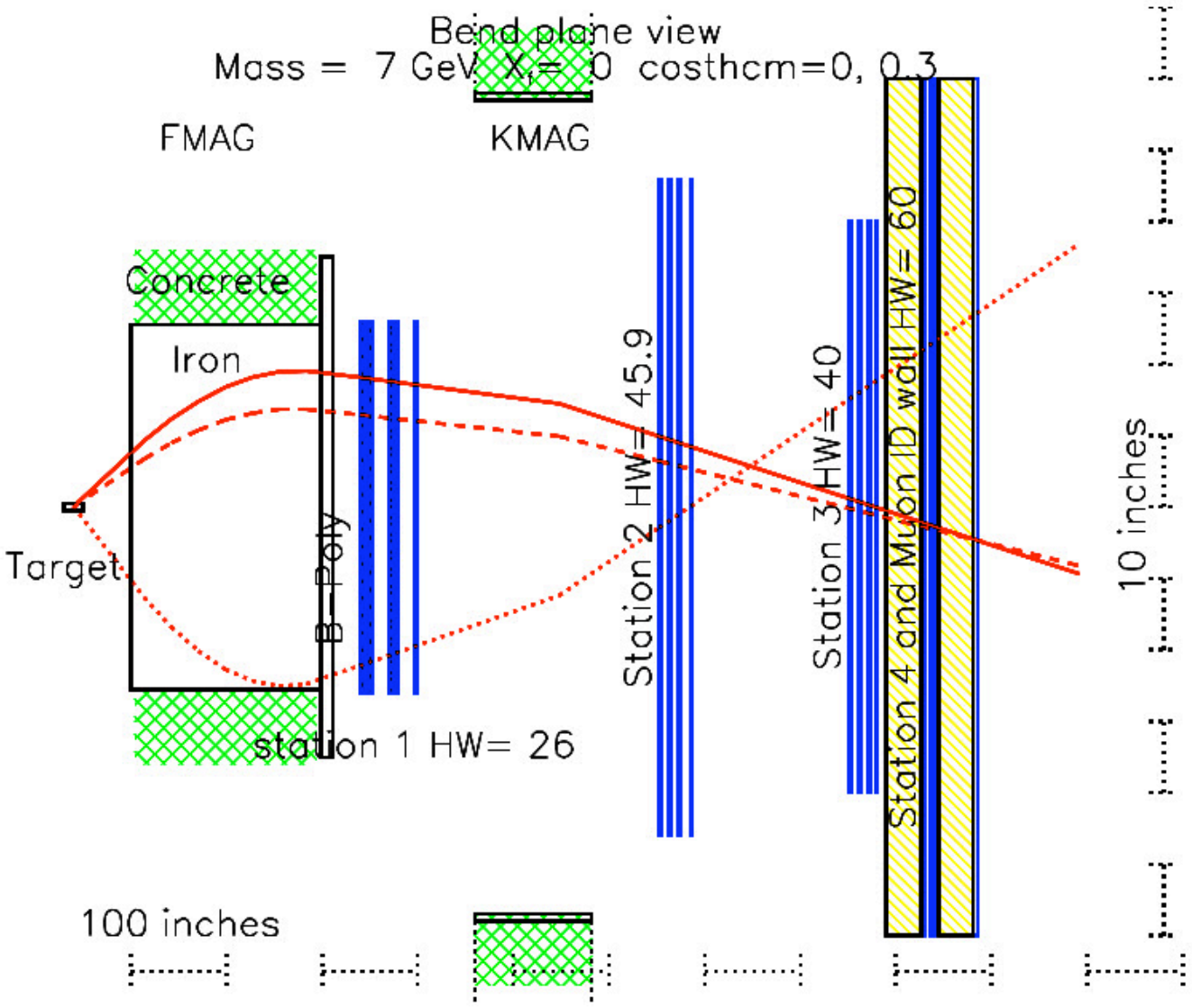
- Overview of Station 1
- Status and Plans
- Timeline
- Open Questions

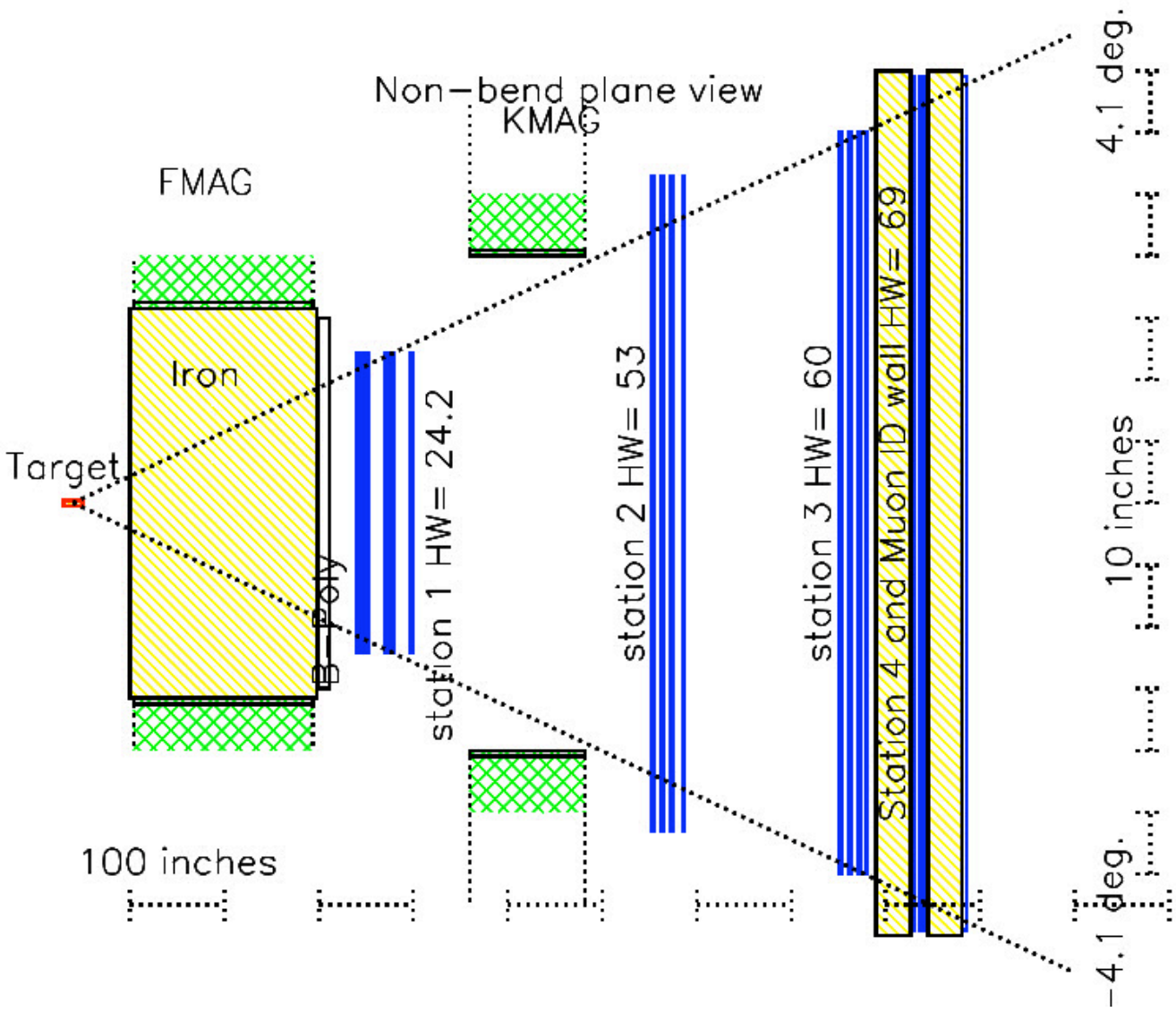
E866 Spectrometer



E906 Spectrometer Layout: Bend Plane View



E906 Spectrometer Layout: Non-Bend Plane View



Station 1: MWPCs

- Located just after Magnet+Beam Dump+Hadron Absorber
  - → High rates (up to 100 MHz)
  - → Used for tracking back to target to eliminate tracks from dump/abs
  - → Combined with Station 2 space points gives momentum determination
- 6 planes (Y,Y',U,U',V,V') of MWPC just after Station 1 Hodoscope
- 132 cm x 132 cm size, 2 mm wire spacing, stereo angle ±14°
- CF_4/Isobutane (80:20) gas
- 3 RF bucket time resolution
- Readout using new preamp/disc/readout electronics from IPAS
  - → Approx 4000 channels needed
  - → Data out into FPGA system (IPAS)
- Station 1 Gas System: CF_4/Isobutane (80:20)
  - → Use Hermes RICH recirculating gas system (property of ANL)
  - → FNAL/Illinois will plumb/integrate with flammable gas safety system(?)

Status and Plans - I

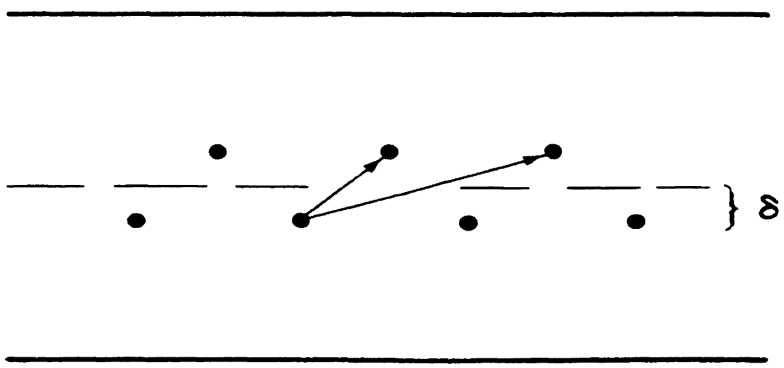
- Chamber designer: At present, working with Colorado designer Eric Erdos
- Visited Fermilab wire chamber lab in Sept; looks in good shape for winding/assembling chamber.
- Eric Erdos, a new Colorado postdoc and possibly undergraduate working with Karen Kephart.
- No substantial recent design progress, except for funding (!)
  → Using "saved" FY2008 funds, have new budget with $40k which can be used immediately for design, without waiting for resolution of continuing resolution (as long as no rescission!) and permission to hire postdoc and RA.

Present Timeline

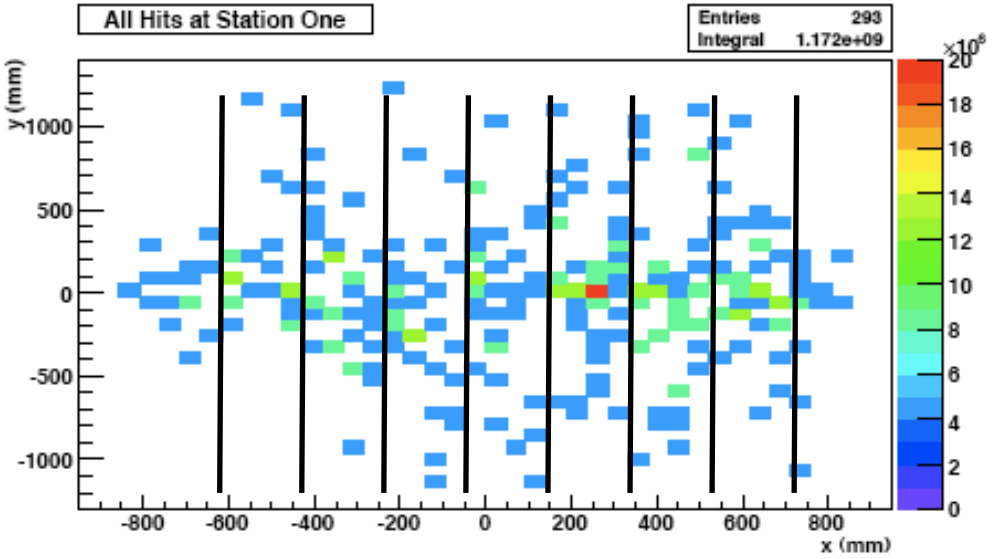
- Complete conceptual design of chambers
  - → Feb 15, 2009
- Complete engineering design of chambers
  - → Apr 15, 2009
- Complete fabrication of frames
  - → June 15, 2009
- Complete wire winding and bonding
  - → August 15, 2009
- Complete assembly of Station 1
  - → Sept 15, 2009
- Complete testing of Station 1
  - → Dec 15, 2009
- Installation Spring 2010

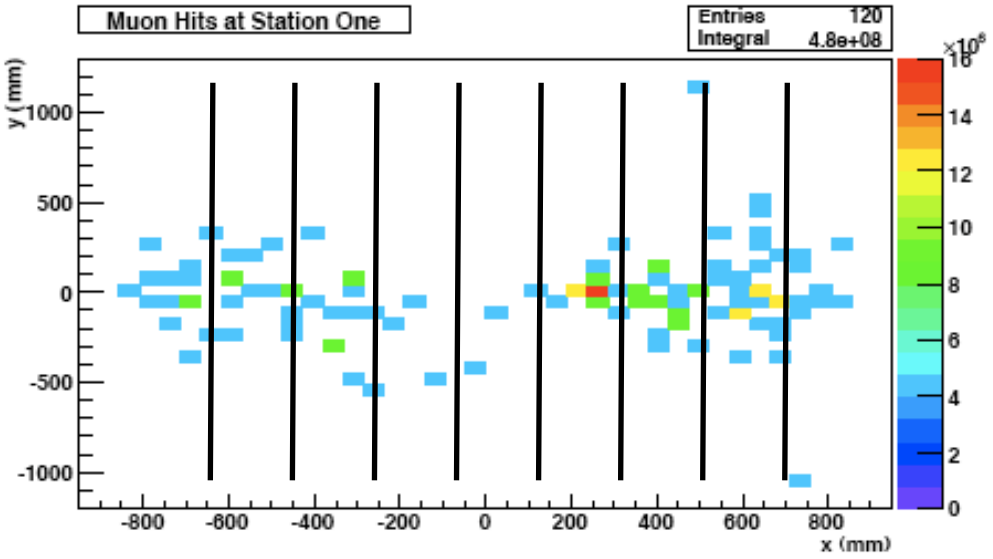
Some Open Questions

- Should we build a small prototype for testing new front end electronics?
  - → Yes; test wire stability and signal readout in Spring 2009
- Should we build spare layers of each wire orientation?
- What is desired spacing of layers?
- Probably need "dead" region to hold wires; mid-plane blocks our physics! Trying a new scheme with two dead regions out of mid-plane.

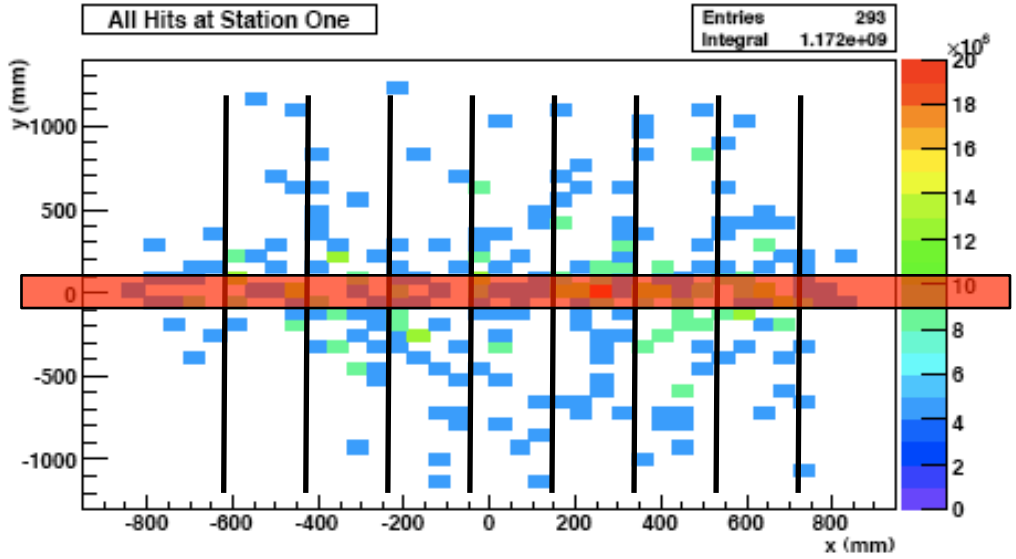


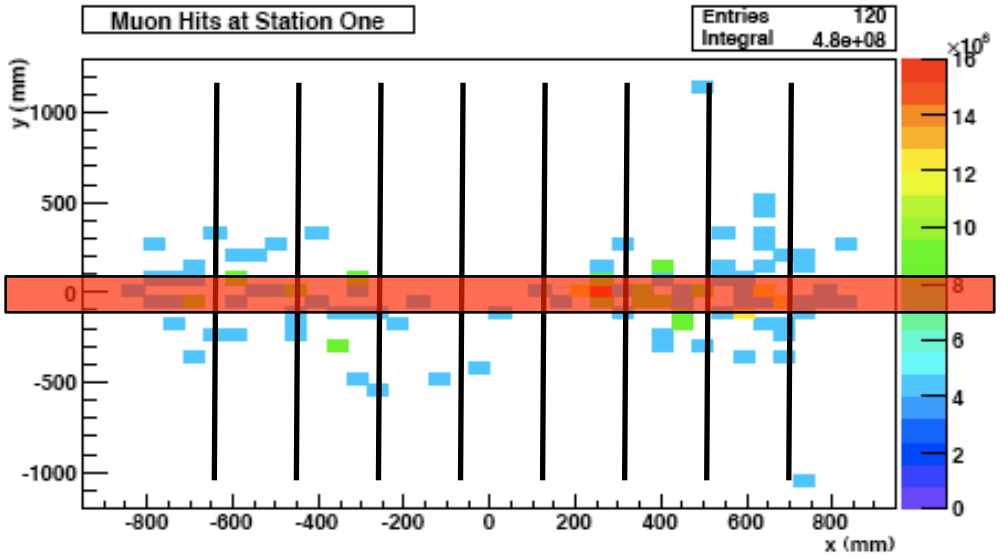
Dead Region Issue





Dead Region Issue





Dead Region Issue